

CLAIMS

What is claimed is:

1. A method (300) of determining relative swing curve amplitudes for a plurality of wafer processes comprising the steps of: coating a first wafer (305) with a first photo resist having a first thickness in accordance with a first process; coating a second wafer (310) with a second photo resist having a second thickness in accordance with a second process, the second photo resist for providing different a top antireflective coating at an actinic wavelength; exposing the first coated wafer (315) to the actinic wavelength; exposing the second coated wafer (320) to the actinic wavelength; sensing a first reflectance of the first photo resist (325) within a predetermined range of the actinic wavelength to determine first peak height data and first valley data; sensing a second reflectance of the second photo resist (330) within a predetermined range of the actinic wavelength to determine second peak height data and second valley data; and determining a value (335) relating to CD as a function of the first peak height data, the first valley data, the second peak height data and the second valley data.

2. The method according to claim 1 wherein the step of sensing further comprises a step of measuring.

3. The method according to claim 1 wherein the step of exposing comprises the step of directing from source of actinic light within a predetermined range of wavelengths and other than a source of approximately white light.

4. The method according to claim 1 wherein the step of determining comprises the steps of computing a first relative swing ratio using the first peak height data and the first valley data.

5. The method according to claim 2 wherein the step of determining comprises the steps of computing a second relative swing ratio using the second peak height data and the second valley data.

6. The method according to claim 2 comprising the step of comparing the first relative swing ratio to the second relative swing ratio to determine which provides critical dimension control within predetermined limits.

7. A method of determining relative swing curve amplitudes for a plurality of wafer processes comprising the steps of: coating a first wafer with a first photo resist having a first thickness in accordance with a first process; coating a second wafer with a second photo resist having a second thickness in accordance with a second process, the second photo

resist for providing different optical characteristics that the first photo resist at an actinic wavelength; exposing the first coated wafer to the actinic wavelength; exposing the second coated wafer to the actinic wavelength; sensing a first reflectance of the first photo resist within a predetermined range of the actinic wavelength to determine first peak height data and first valley data; sensing a second reflectance of the second photo resist within a predetermined range of the actinic wavelength to determine second peak height data and second valley data; and determining a relative swing ratio for the first and second processes in dependence upon the first peak height data, the first valley data, the second peak height data and the second valley data.

8. The method according to claim 7 wherein the step of sensing comprising a step of measuring.

9. The method according to claim 7 wherein the step of exposing comprises the step of directing from source of actinic light within a predetermined range of wavelengths and other than a source of approximately white light.

10. The method according to claim 7 wherein the step of determining comprises the steps of computing a first relative swing ratio using the first peak height data and the first valley data.

11. The method according to claim 10 wherein the step of determining comprises the steps of computing a second relative swing ratio using the second peak height data and the second valley data.

12. The method according to claim 10 comprising the step of comparing the first relative swing ratio to the second relative swing ratio to determine which provides critical dimension control within predetermined limits.

13. The method according to claim 7 wherein the second photo resist comprises TARC.

14. The method according to claim 7 wherein the actinic wavelength is an ultraviolet wavelength.

15. The plurality of wafers manufactured in accordance with the method of: coating a first wafer with a first photo resist having a first thickness in accordance with a first process; coating a second wafer with a second photo resist having a second thickness in accordance with a second process, the second photo resist for providing different a top antireflective coating at an actinic wavelength; exposing the first coated wafer to the actinic wavelength; exposing the second coated wafer to the actinic wavelength; sensing a first

reflectance of the first photo resist within a predetermined range of the actinic wavelength to determine first peak height data and first valley data; sensing a second reflectance of the second photo resist within a predetermined range of the actinic wavelength to determine second peak height data and second valley data; and determining a value relating to CD as a function of the first peak height data, the first valley data, the second peak height data and the second valley data.